

CLAIMS:

1. (Currently Amended) A trocar comprising a body portion having a proximal and distal end operatively connected to a neck portion extending from said distal end of said body portion, said neck portion including an insert end, said insert end including a fluid and airtight chamber, said chamber including sealing means at two ends thereof in a distal end of said neck portion, for maintaining a fluid and airtight seal in both a neutral condition and an engaged position wherein an instrument extends through said chamber and said sealing means, said sealing means including slits perpendicular to one another, said trocar including an instrument lumen within said chamber for receiving an instrument therethrough, said instrument lumen extending from an opening in said body portion to said insert end of said chamber ending at said sealing means, and a downflow lumen coaxial with said instrument lumen extending from said body portion to an outlet port proximate to said instrument lumen and said body portion including an inlet port fluidly connected to said downflow lumen for enabling flow of an inert fluid from said downflow lumen into said instrument lumen about an instrument extending therethrough and out of an ~~inlet~~ outlet port in said body portion.

2. (Canceled)

3. (Previously Presented) The trocar according to claim 1, wherein said sealing means includes a deformable diaphragm sealingly disposed at each of said ends of said chamber.

4. (Original) The trocar according to claim 3, wherein said sealing means is further defined as including a series of at least two deformable diaphragm and at least one O-ring.

5. (Original) The trocar according to claim 4, wherein said deformable diaphragms have at least one slit therethrough for the insertion of an instrument through said slit.

6. (Original) The trocar according to claim 5, wherein said slits on consecutive of said deformable diaphragms are perpendicular to one another.

7. (Previously Presented) The trocar according to claim 1, wherein said trocar includes a neck portion for allowing insertion of an instrument there through and said downflow lumen is further defined as substance removing means for removing any substance from within said neck portion about an instrument disposed within said neck portion.

8. (Previously Presented) The trocar according to claim 7, wherein said neck portion includes said instrument lumen in communication with said chamber for receiving an instrument therethrough and said downflow lumen is further defined as fluid flow means for flowing an inert fluid through said instrument lumen from proximate to said chamber toward and out an opposite end of said instrument lumen.

9. (Original) The trocar according to claim 8, wherein said fluid flow means includes at least one downflow lumen extending through at least part of a length of said neck portion having ports opening into said instrument lumen and an inlet opening at an opposite end thereof for receiving the inert fluid for flowing fluid therethrough and into said instrument lumen proximate to said chamber.

10. (Original) The trocar according to claim 9, wherein said instrument lumen includes outlet ports integral therewith and proximate to said opposite end of said instrument lumen for releasing fluid therefrom which flows through said instrument lumen with any substance displaced therein.

11. (Original) The trocar according to claim 1, further including agitating means for agitating particles within said trocar, said agitating means operatively connected to said trocar.

12. (Original) The trocar according to claim 11, wherein said agitating means is selected from the group consisting essentially of a manual agitator and an automatic agitator.

13. (Original) The trocar according to claim 12, wherein said automatic agitator is an ultrasonic agitator.

14. (Original) The trocar according to claim 1, wherein said trocar is formed of a resilient material.

15. (Original) The trocar according to claim 14, wherein said resilient material selected from the group consisting essentially of plastic, metal, and a plastic-metal composite.

16. (Original) The trocar according to claim 15, wherein said plastic is a plastic that can be seen through upon application of ultrasound.

17. (Currently Amended) A method of maintaining a fluid and airtight environment when introducing a surgical instrument into a patient, said method including the steps of inserting the instrument into the patient through a fluid and airtight seal including slits perpendicular to one another; and flowing an inert fluid through a downflow lumen in a trocar, through an outlet port of the downflow lumen into an instrument lumen which is coaxial with said downflow lumen, and up through the instrument lumen, thereby removing any substances in the instrument lumen, and preventing the substances from entering the patient.

18. (Original) The method according to claim 17, wherein said inserting step is further defined as inserting the instrument through a series of seals and O-rings.

19. (Original) The method according to claim 18, wherein said inserting step is further defined as inserting the instrument through a neck portion of a trocar, the neck portion including the series of seals and O-rings, the seals having a neutral condition and an engaged condition when the instrument is extended there through.

20-21. (Canceled)

22. (Original) The method according to claim 17, further including creating a hole in the patient for insertion of the trocar.

23. (Original) The method according to claim 22, wherein said creating step includes creating a hole in a cavity of the patient using an obturator.

24. (Original) The method according to claim 22, wherein said creating step includes creating a hole in a cavity of the patient using a knife or scalpel.

25. (Original) The method according to claim 22, further including maintaining the trocar in place within the patient.

26. (Original) The method according to claim 25, wherein said maintaining step includes maintaining the trocar in place via the hole created in the patient.

27. (Currently Amended) A method of removing a substance from an instrument lumen of a trocar by flowing fluid through a downflow lumen, into the instrument lumen which is coaxial with the downflow lumen, removing the substance from the instrument lumen with the fluid, and preventing the substance from entering a patient.

28. (Previously Presented) The method according to claim 27, further including the step of inserting an instrument through the instrument lumen and removing the substance from the instrument lumen about the instrument.

29. (Previously Presented) The method according to claim 28, further including the step of sealing the instrument lumen at an insert end of the instrument lumen about the instrument, flowing a fluid into the downflow lumen proximate to the insert end, and forcing the flow of fluid through the instrument lumen to a fluid discharge end.

30. (Previously Presented) The method according to claim 27, further including agitating the trocar for aiding in the removal of substances.